

Agency: Commerce, Community and Economic Development**Grants to Municipalities (AS 37.05.315)****Grant Recipient: Anchorage****Project Title:****Project Type:** Planning and Research

Anchorage - Sand Lake Watershed Drinking Water Studies

State Funding Requested: \$250,000**House District:** Anchorage Areawide (17-32)

Future Funding May Be Requested

Brief Project Description:

The overall goals of this project are to prevent contamination of local water wells and identify wells that are at risk of contamination or that may become contaminated so that remedial action may be implemented.

Funding Plan:**Total Cost of Project: \$800,000**

	<u>Funding Secured</u>		<u>Other Pending Requests</u>		<u>Anticipated Future Need</u>	
	<i>Amount</i>	<i>FY</i>	<i>Amount</i>	<i>FY</i>	<i>Amount</i>	<i>FY</i>
State Funds	\$50,000	09				
Total	\$50,000					

Detailed Project Description and Justification:

Sand Lake Watershed Drinking Water Studies

Results of 2008 Funding, and Plans for 2009 Funding

From the Alaska Legislature

The Sand Lake community has effectively spent most of the \$50,000 appropriation from the 2008 Alaska Legislature to drill two monitoring wells that have disproved previous Municipality of Anchorage and Alaska Department of Environmental Conservation assertions that all wells and aquifers in the Sand Lake area are protected by thick confining layers. The government assertions provided the foundation for Municipal approval of new development in the Sand Lake Gravel pits. The first well, drilled in a residential neighborhood reliant on private wells, found an aquifer at a depth of 90 feet unprotected by any significant silt or clay layers. The second well identified two other aquifers at depths of approximately 215 ft and 310 ft confirming the complicated geology of the area.

The Municipality of Anchorage has also entered into an agreement to create a landfill in one of the two exposed aquifers in the Gravel Pit, without any plan for groundwater monitoring to protect adjacent downgradient well owners. Many well owners downgradient of the Lucy Pit tap a relatively shallow sand and gravel aquifer.

These two events by themselves show the critical need to continue funding of the Sand Lake Watershed Studies to define groundwater flow systems and monitor groundwater quality to assure residents that their well-water supplies are reasonably safe. In addition, past reports of fouled wells and the results of two legislature-funded studies by UAA and UAF confirmed

that aquifers are not protected by continuous confining layers and that degradation of groundwater quality through urban development is a real possibility.

Approximately 3000 Sand Lake area residents rely on local wells for their water supply.

The ADEC has acknowledged that wells in urbanizing areas are at risk of contamination and has recommended that risk assessments be conducted to clarify the risks of contamination of private wells. Before these studies can be performed, however, additional work is needed to determine the vulnerability of aquifers in order to make the risk assessments meaningful. The recent UAF study, for example, found that wells previously thought to be protected by thick confining layers, do, in fact, provide water containing atmospheric tritium from testing of thermonuclear devices that has been recharged into the groundwater system within approximately the past 50 years. Additional testing for tritium is needed.

2008 Study Findings

The 2008 funds were used to drill two wells tapping aquifers of different depths at one strategically selected site in a residential neighborhood directly downgradient of the exposed aquifer/South Pond. The wells have recently been sampled and results are pending. The drilling confirms that the exposed aquifer penetrated by the South Pond is present in the residential neighborhood and there appears to be a continuous flow system between the two areas. The findings directly refuted previous assertions that all wells are protected by continuous confining units in the area. Preliminary findings have been presented to the Sand Lake Community Council. With limited funding, the 2008 studies have established a "proof of concept" that a groundwater monitoring network can be cost-effectively established to provide fact-based assurances to local homeowners that well-water supplies are reasonably safe but that continued vigilance and monitoring of potential source of contamination is warranted.

2009 and Ongoing Studies

The primary goals of the Sand Lake Watershed Studies are to prevent contamination of local water wells, provide an early detection system if groundwater becomes impaired, and provide some assurance to residents on an ongoing basis that their well-water supplies are reasonably safe. Attached is a budget document showing the proposed expenditure of \$250,000/yr for each of the next three years to establish a network of monitoring wells in the Sand Lake area.

The goals of the Watershed Studies will be achieved by implementation of the following objectives:

- Monitor groundwater quality at new dedicated sentinel monitoring wells that are strategically placed between potential source areas of contamination and private wells. The sentinel wells will form an early warning system for contaminants. Two to three nested well clusters are planned for 2009. At least two clusters are targeted for completion between the Lucy Pit, which is scheduled for filling with up to a million cu yards of material (this needs to be fact checked) and an adjacent neighborhood served by private wells.
- Installation and testing of the new wells will also provide additional detailed data for mapping aquifers and flow systems in the Sand Lake area and provide a better understanding of the vulnerability of local wells to contamination.
- To supplement data from the new wells, a publicly available database will be developed and expanded from the recent previous work that will track knowledge of water quality in the area.

• Public education activities will be conducted to inform residents of the findings of the studies and how to prevent groundwater contamination. Findings will be incorporated into the Sand Lake Area Plan, now being initiated by the Municipality of Anchorage.

The results of the watershed studies will be used to disseminate information about water treatment alternatives for arsenic and prioritize funding and studies for further expansion of public water and sewer into the Sand Lake area.

Community Review

The Sand Lake Watershed Studies are regularly reviewed at Sand Lake Community Council meetings and are supported by past resolutions. The current proposal for funding in 2009 is supported by the attached resolution (pending).

Project Timeline:

The study and testing has already started and will continue (with funding) until FY12 when the study is scheduled to conclude.

Entity Responsible for the Ongoing Operation and Maintenance of this Project:

Municipality of Anchorage

Grant Recipient Contact Information:

Name: Will Watson
Address: 8111 Sundi Dr
Anchorage, AK 99502
Phone Number: (907)243-7966
Email: watson56@gci.net

Has this project been through a public review process at the local level and is it a community priority? ☒ Yes ☐ No

Project Title: Sand Lake Watershed Drinking Water Studies

Cost of Project: \$250,000

Brief Project Description:

The overall goals of this project are to prevent contamination of local water wells and identify wells that are at risk of contamination or that may become contaminated so that remedial action may be implemented.

It is of critical importance to determine and monitor the influence of the surface aquifer on underlying aquifers.

The specific objectives of the Sand Lake watershed studies are to map aquifers, understand groundwater flow systems, provide early detection monitoring for contaminants, assess risks to wells, and conduct contaminant prevention activities.

These objectives will be achieved through an inventory and sampling of existing wells, drilling and testing of new sentinel monitoring wells in multiple aquifers, and performing Source Water Assessments through established protocols. Public education will be an important component of the work at all stages.

Project Timeline: FY 10

Entity Responsible for Ongoing Operation and Maintenance of this Project:
Municipality of Anchorage

Grant Recipient Contact Information:

*Will Watson
(907) 243-7966
watson56@gci.net*

Staff Contact:

*Shalon Szymanski
Staff to Senator Lesil McGuire
907-465-4522*

**Sand Lake Watershed Drinking Water Studies
Results of 2008 Funding, and Plans for 2009 Funding
From the Alaska Legislature**

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SAND LAKE WATERSHED STUDIES

The overall goals of this project are to prevent contamination of local water wells and identify wells that are at risk of contamination or that may become contaminated so that remedial action may be implemented. It is of critical importance to determine and monitor the influence of the surface aquifer on underlying aquifers.

The specific objectives of the Sand Lake watershed studies are to map aquifers, understand groundwater flow systems, provide early detection monitoring for contaminants, assess risks to wells, and conduct contaminant prevention activities. These objectives will be achieved through an inventory and sampling of existing wells, drilling and testing of new sentinel monitoring wells in multiple aquifers, and performing Source Water Assessments through established protocols. Public education will be an important component of the work at all stages.

Proposed budget

Item	Number	Cost (each)	FY09	FY10	FY11	FY12	4-yr total
			Year 1*	Year 2	Year 3	Year 4	
Source water assessments	9	\$7,000					\$63,000
Workplans and permitting	1	\$21,000	\$3,000	\$9,000	\$6,000	\$3,000	\$21,000
Access Development	1	\$30,000	\$2,000	\$10,000	\$8,000	\$2,000	\$22,000
Construct new mon. well clusters (avg 500 ft ea@\$60/ft plus geologist 63 hr ea@85/hr)	7	\$35,000	\$28,000	\$105,000	\$105,000		\$238,000
Hydraulic testing and monitoring (aquifer test and dataloggers)	9	\$5,000	\$0	\$15,000	\$15,000	\$15,000	\$45,000
Water Sampling and laboratory analysis	100	\$1,500	\$6,000	\$46,000	\$40,000	\$57,000	\$149,000
Neighborhood and monitoring well database and Quality Assurance review	1	\$40,000	\$3,000	\$10,000	\$7,000	\$20,000	\$40,000
Contract Administration and Project Management (approx. 6% of total)	1	\$50,000	\$3,000	\$15,000	\$15,000	\$17,000	\$50,000
Data analysis and reporting (320 hrs @avg \$100/hr)	1	\$32,000	\$2,000	\$10,000	\$8,000	\$12,000	\$32,000
Contaminant prevention (public education, source reduction, etc.)	1	\$50,000	\$1,500	\$5,000	\$15,000	\$27,000	\$48,500
Administrative overhead (rent, utils, accounting, HR, etc.)	1	\$95,000	\$1,500	\$25,000	\$31,000	\$34,000	\$91,500
Total			\$50,000	\$250,000	\$250,000	\$250,000	\$800,000
Capital funds needed:			\$750,000				

Notes and Assumptions:

*Funding for year 1 was approved in 2008.

1. funding will go to the Municipality of Anchorage for award to a nonprofit who will contract out the work to multiple contractors, administer the funds, and coordinate with other agencies.
2. all data obtained will be publicly available.
3. All reports will be peer and publicly reviewed in draft form prior to completion.
4. No inflation adjustment

From: "Jim Munter" <jamunter@arctic.net>
Subject: Sand Lake Watershed Studies update
Date: January 28, 2009 9:36:40 PM AKST
To: "William Watson" <watson@alaska.net>
Cc: "Holly Kent" <holly@anchoragecreeks.org>

Will,

Here is the update we discussed the other day.

Re: Sand Lake Watershed Studies completes geologic test drilling and construction of two long-term monitoring wells.

Two monitoring wells were successfully drilled between January 13 and January 19, 2009, downgradient of the South Pond that is located in the south end of the old Sand Lake gravel pit. The wells were drilled on a cooperating homeowner's property near the old gravel pit. The drilling occurred in accordance with our schedule and slightly under budget from funds appropriated by the Alaska Legislature last spring.

The first well tapped a sand and gravel aquifer at a depth interval of 80 to 93 feet that is at approximately the same elevation as the South Pond. Sands and gravels were encountered throughout most of the interval drilled, without evidence of any significant confining layer. There is no evidence that this aquifer is protected by confining layers as has been postulated.

The second well was drilled through the uppermost aquifer and encountered silty sands and a second aquifer at a depth of about 215 ft. This aquifer contained appreciable silt. Drilling continued until a third aquifer was encountered at a depth of about 310 ft and the well was completed at a depth of 317 ft. The drilling results show that there are multiple aquifers present in the area, including an upper aquifer that appears to be closely associated with the aquifer found at the South Pond.

The next phase of the Sand Lake Watershed Studies project will be to obtain water samples from the wells for comprehensive baseline water quality evaluation and prepare a hydrogeologic cross section to illustrate the relationships of the aquifers and groundwater flow systems. The new monitoring wells are centrally located in an area of private wells and are expected to serve as excellent long-term sentry wells for detecting any changes in groundwater quality in the area southwest and downgradient of the South Pond.

Draft

RESOLUTION 09-_____

SAND LAKE COMMUNITY COUNCIL

SUBJECT: REQUEST PALIN ADMINISTRATION TO CONTINUE FUNDING FOR
PUBLIC SAFETY WATER MONITORING IN THE SAND LAKE COMMUNITY.

WHEREAS, Sand Lake Community Council (SLCC) has reviewed the preliminary findings of the initial phase of the Sand Lake Watershed Studies;

WHEREAS, the preliminary findings are consistent with previous UAA and UAF findings that aquifers near the Sand Lake Gravel Pits are not protected by continuous confining units, contrary to previous assertions used to plan and approve development in the pits;

WHEREAS, the Municipality has recently issued a sole-source license to White Raven, a private contractor, to place over half a million cubic yards of fill in the Lucy Pit, a large deep hole adjacent to a planned school site, and it is critical that the necessary sampling of water and soil be undertaken.

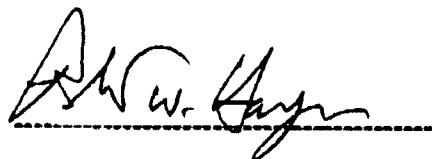
WHEREAS, numerous shallow private wells are located immediately downgradient of the South Pond the Lucy Pit and are believed to be vulnerable to contamination;

WHEREAS, the Sand Lake Watershed Studies are designed to protect groundwater and regularly monitor groundwater quality and soil sampling to provide some assurance to local residents that their well-water supplies are safe.

NOW, WHEREFORE, the Sand Lake Community Council resolves the following request to the Palin Administration and the Alaska Legislature, including our representatives Senator McGuire, Rep. Bob Buch and Rep. Craig Johnson.

The Sand Lake Community Council hereby resolves to support the continuing funding of the Sand Lake Watershed studies in 2009 by the Alaska Legislature and signing into law by Governor Palin in the amount of \$250,000.

ADOPTED, this ^{9TH} ~~11TH~~ day of March 2009 and dated this ninth day of March, 2009, at Anchorage Alaska by the Sand Lake Community Council.



Mr. Robert Hayes, President